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Discharge cap for releasable tablet

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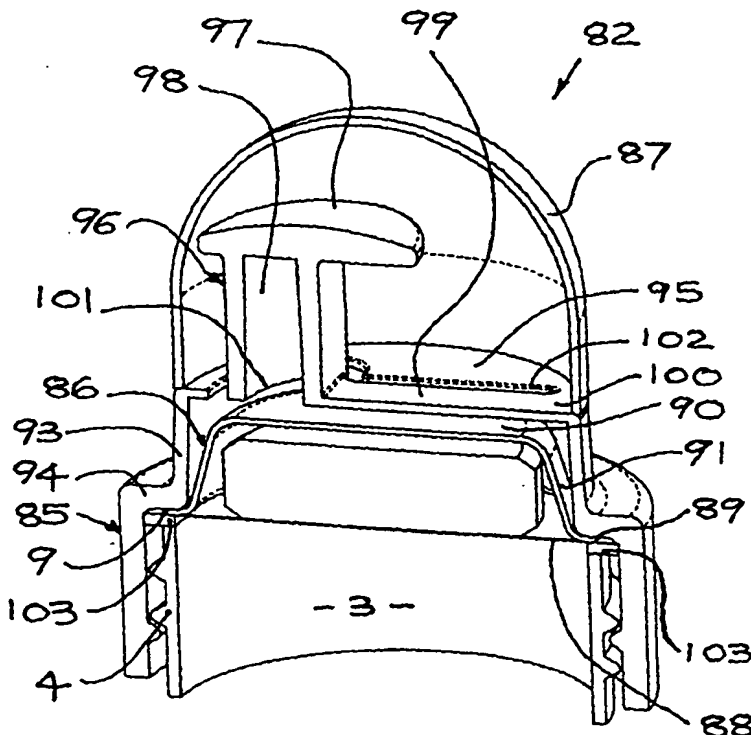
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(54) Title: DISCHARGE CAP FOR RELEASABLE TABLET

(57) Abstract

A cap (2, 32, 62, 82, 112, 132, 152) for a container (3), for a drink of two components, can be stored or carried with the components stored separately. Mixing prior to consumption is effected by a pushing means (45, 76, 96) incorporated into a cover (6, 46, 65, 86, 106, 216, 316) on the cap, which cover is releasably secured to the container. The pushing means bears against a tablet holder (12) the base (8, 88) of which has a low burst strength. The pushing means can be one of a number of embodiments, all of which can operate with or without an annular cutting ring (124, 224, 324, 424) and flexible seal (25, 125) adjacent the underside of the tablet holder. The cover and tablet holder form a liquid seal with the top of the container until the cover is removed.



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TITLE: DISCHARGE CAP FOR RELEASABLE TABLET**TECHNICAL FIELD**

The present invention relates to a cap for a container, in which the cap includes means for releasing material contained within the cap into the container and for sealing the container.

BACKGROUND ART

Different styles of caps or lids for containers (for liquids) are prolific. They are known in a variety of forms, which can include, for example: a tamper-evident ring, the ability to be releasable, a screw-thread, or a combination of these. Such caps can also include sipper tops (which can be drunk through and are slidably re-sealable).

Drinks and drink containers where two components making the drink are best mixed immediately before drinking are available separately. When the concentrate is in tablet or powder form, the availability of drink containers with all elements for the drink in the one container is not common. One example of such a cap for a container is in my application, WO 98/40289.

Other examples include the following. WO 98/00348 discloses a closure cap which ruptures a blister pack (containing a tablet) on the opening of the cap, and provides an immediate fluid pathway to the outside of the container. JP 08091418 also discloses a closure cap and basket. However the whole of the closure cap must be moved inwardly onto the container, to mix the liquid and the solid together.

US Patent No. 4638927 (Morane) discloses a cap with a slidable pusher to break the tablet holder. However, this action immediately creates a fluid pathway to the outside of the container. This also occurs in US Patent No. 3347410 (Schwartzman).

These problems are to some extent overcome by the invention disclosed in my application WO 98/40289. This discloses a cap with a collar, a basket containing the solid part of the drink, and a spike, formed in the cap, which can release the tablet into the fluid in the bottom of the container. The container and cap also include the ability of the cap to act as a sipper top, and to include a separate cover and tamper-evident ring.

The disadvantage of this manner of overcoming the drawbacks of earlier art is the complexity of the design and the die needed for the manufacture of the neck portion (to pierce the top and free the tablet into the fluid). Further, the overall height of the cap above the container can be awkward. In addition, the sealing of the container, either when mixing the fluid and solid or when the container is not in use after mixing, requires an arrangement of two sealing means or a sliding engagement of two or more parts.

It is an object of the present invention to address the foregoing problems or at least to provide the public with a useful choice.

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Further aspects and advantages of the present invention will become apparent from the ensuing description which is given by way of example only.

DISCLOSURE OF INVENTION

According to one aspect of the present invention there is provided a cap for a liquid container with a top opening, said cap including:

a tablet holder which includes a flanged flat edge which is capable of being heat sealed or glued to other materials; a flexible top; a base of flexible material, said base having a burst strength which is less than that of said top; wherein the flanged edge, the top and the base are capable of lamination; and wherein the top and the base are spaced apart, forming a space for the placement therebetween of a tablet;

a collar with means to releasably engage with the top of the container, said collar including a flange for releasably retaining said flanged edge of the tablet holder between the collar and the top of the container, forming a fluid seal therebetween;

a cover which is releasably securable to the collar; and

pushing means capable of manual operation to push the top of the tablet holder inwards into the container, when the tablet holder is in position; wherein

the top of the tablet holder provides part of the fluid seal once the burst strength of the base is exceeded on application of force to the pushing means; and wherein

said tablet holder and collar are releasably removable from the container.

In a further aspect of the present invention there is provided a cap for a liquid container with a top opening, as described above, in which the pushing means is integrally formed with the cover, and may include a centrally located area of reinforcement or stiffening, or a shaped area of increased strength on the top of the cover. Optionally, said pushing means may be incorporated as a tear away area of the top of the cover which can be released from the cover and pushed down onto the top of the tablet holder in one action.

A further option is to incorporate the pushing means in the collar, forming a dome across the central portion of the collar.

Optionally the tablet holder may be formed with the base and the edge being flat and planar; and the top being raised above the edge. Further, optionally, the tablet may be sealed in-between two layers of highly flexible foil (or foil and plastic) to form a package. The edges of the package are heat sealed to the flanged edge of the holder.

In a still further aspect of the present invention there is provided a cap for a liquid container with a top opening, as described above, in which the pushing means is integrally formed with the cover, said pushing means including:

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a hinged portion of the top of the cover, said hinged portion comprising: a partially cut away section, being from the top of the cover; and two sections, one of which is a straight section of the top of the cover, which straight section is flexible and acts as a hinge means for the hinged portion, and a cut-away section which section is resiliently moveable; and

an operative portion, which includes digit-engaging means, and which portion is positioned over the cut-away section of the hinged portion, said operative section being moveable between a first and a second position, the second position being one in which pressure is applied through the cut-away portion, to the top of the tablet holder.

Preferably, the digit-engaging means is in the form of a circular tab which is elevated above the top of the cover by a columnar support. Also preferably, the cut-away section is substantially straight-sided with a circular balloon-style end portion which is immediately underneath the digit-engaging means.

Optionally the shape of the cut-away can be selected from: straight sided with a balloon-style end portion; parallel arcuate sides; non-parallel straight sides; non-parallel arcuate sides; and a combination thereof.

In a yet further aspect of the present invention there is provided a cap for a liquid container with a top opening, as described above, in which the cap further includes a cutting ring which is annular and positioned between the top of the container and the flanged edge of the tablet holder. Preferably also, said cutting ring has an inner edge adapted to cut and/or break the base of the tablet holder.

Preferably also, said cap further includes a flexible annular seal between the top of the container and the flanged edge. Optionally, the annular seal and the cutting ring are formed integrally, when both options form part of the cap.

Optionally the base of the tablet holder includes a circular area positioned adjacent and inward of the flanged edge, which circular area is an area of reduced burst strength relative to that of the remainder of the base. Optionally, there is included in the cap a further circular flexible seal which is positioned below and spaced apart from the base of the tablet holder, said seal being of a material of low burst strength, such that the tablet or cut-away section, when bearing down on said seal, causes the seal to burst.

Optionally, the cap or the cap and container further includes tamper evident means. Such means is of known type and, for example, includes a collar of plastic material around the seal between the cover and the container, or optionally could be incorporated into the cover.

Preferably, the cover is formed from plastics, integrally, by a method selected from: injection moulding, co-moulding, blow moulding; and a combination of these. Preferably all other parts (except the tablet) are of a plastics material or incorporate plastics. Preferably the tablet is of known type that effervesces and dissolves quickly when in liquid.

Optionally the cap can include a sipper top or other means to evacuate the fluid from the container (once the two parts are mixed), which can be secured to the container after the removal of the collar and holder remains.

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BRIEF DESCRIPTION OF DRAWINGS

By way of example only, preferred embodiments of the present invention will be described in detail with reference to the accompanying drawings, in which:-

Figure 1 is a partial perspective side section view of a first preferred embodiment of the present invention with the cap closed;

Figure 2 is the same view of the invention as shown in Fig. 1, without the cover;

Figure 3 is the same view as shown in Fig. 2, with the tablet holder broken and the tablet in the container;

Figure 4 is a partial perspective side section view of a second preferred embodiment of the present invention with the cap closed;

Figure 5 is the same view as Fig. 4, with the tablet holder broken and the tablet in the container;

Figure 6 is a partial perspective side section view of a third preferred embodiment of the present invention with the cap closed;

Figure 7 is the same view as Fig. 6 with the tamper-evident ring opened;

Figure 8 is the same view as Fig. 7, with the ring removed;

Figure 9 is the same view as Fig. 8, with the tablet holder broken and the tablet in the container;

Fig. 10 is a partial perspective side section view of a fourth preferred embodiment of the present invention with the cap closed;

Fig. 11 is a partial perspective side section view of a fifth preferred embodiment of the present invention with the cap closed;

Fig. 12 is a partial perspective side section view of a sixth preferred embodiment of the present invention with the cap closed;

Fig. 13 is a partial perspective side section view of a seventh preferred embodiment of the present invention with the cap closed;

Fig. 14 is the same view as Fig. 11, with the tablet holder broken and the tablet in the container;

Fig. 15 is a partial top perspective view of a second preferred embodiment of the pushing means of the present invention;

Fig. 16 is a plan view from underneath of a second preferred embodiment of the holder of the present invention;

Figs. 17 a and b show two views of a first preferred embodiment of the cutting ring of the present invention;

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Figs. 18a and b show two views of a second preferred embodiment of the cutting ring of the present invention;

Figs. 19a and b show two views of a third preferred embodiment of the cutting ring of the present invention;

Fig. 20 is a plan view in diagrammatic form of a third preferred embodiment of the pushing lever of the present invention; and

Figs. 21a and b show two views of a fourth preferred embodiment of the cutting ring of the present invention.

BEST MODES FOR CARRYING OUT THE INVENTION

Referring to Figures 1 to 3, a first preferred embodiment of the cap 2 for a container 3 is there shown. The container 3 includes a top opening with external screw threads on sides 4. A collar 5 is internally screw-threaded to engage with the sides 4 of the container 3. The cap 2 includes a tablet holder 6 and cover 7.

The holder 6 includes a base 8 with a thickened circumferential edge 9, and a top 10. The base 8 and edge 9 are flat, with the top 10 having sides 11. The base 8, top 10, and sides 11 define a space for a tablet 12. The base 8 is of a material that has a considerably smaller burst strength than that of the top 10 or the sides 11. The base 8 is made of a foil material of known type which is impervious to liquid and gases. If so desired, the foil may include a plastic film of known type.

If so desired, the holder 6 may be arranged with the base 8 and top 10 inverted, so that the top 10 is flat and approximately co-planar with the edge 9. The base 8 and sides 11 would then extend downwardly from the top 10.

The edge 9 and the top 10 are of a plastics material that is generally stiffer than the material of the base 8. However the base 8 is also constructed so that there is a measure of flexibility therein.

The collar 5 includes sides 13 and a smaller annular flange 14. When the collar 5 is in position the flange 14 extends inwardly of the top of the sides 4 and of the edge 9. However the hole left in the collar 5 is sufficient that the sides 11 and the top 10 of the holder 6 will fit therethrough.

The cover 7 is shaped to fit over the collar 5 and holder 6 and be releasably securable to the collar 5. This securement can be through securing means on the collar 5 and the cover 7; or may be in the form of a snap or interference fit between the collar 5 and the cover 7, as is desired. Further, the cover 7 may be hinged to the collar 5, if so desired.

The collar 5 and the cover 7 may include tamper-evident means (not shown) of known type, if so desired. This may be incorporated into the collar 5 and cover 7 at the time of manufacture. Alternatively, the tamper evident means may be a plastic film (not shown) which is sealed around the collar 5 and the cover 7, covering the join therebetween. Such film is of the type that can be pulled off the container 3, when opening the container 3.

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To mix the two parts of the drink, the cover 7 is removed and downward force exerted on the top 10 (Fig. 2). This downward pressure is generally supplied by a thumb or other manual means. The lesser burst strength of the base 8 causes this to break before the top 10. The flange 14 retains the edge 9 in position. Thus after the base 8 has broken, the tablet 12 is forced or dropped into the container 3, mixing with the liquid therein (Fig. 3).

If so desired, the base 8 includes a weakened circumferential portion immediately adjacent the outside edge of the tablet 12. Thus when the burst strength of the base 8 is reached, a circular portion of the base 8 parts from the rest of the base 8, allowing the tablet 12 to easily fall into the container 3.

If so desired, the holder 6 can be constructed so that the tablet 12 is encased in the foil of the base 8 with a circular overlap about the outside of the tablet 12. This overlap is then heat sealed or otherwise laminated to the edge 9 to form the holder 6.

The container 3 can be shaken or moved to aid in the mixing of the tablet 12 into the liquid. Once the tablet 12 is completely dissolved, the collar 5 and the remains of the holder 6 can be released from the container 3, allowing access to the drink (Fig. 4). The collar 5 and the cover 7 may be re-secured to the container 3, providing for a means to reseal the drink, if so desired.

Referring to Figures 4 and 5, a second embodiment of the cap 32 for the container 3 is there shown. Where parts are unchanged from that discussed above with reference to the first embodiment, like numerals are used.

The collar 35 includes a flange 44 and upper sloping side 34 to a domed top 46. At the centre of the top 46 is a button 45. The collar 35 is formed integrally. The flange 44 performs the same function as the flange 14 of the first embodiment, as described above.

To mix the two parts of the drink, the cover 7 is removed and downward force exerted on the button 45 (Fig. 5). This downward pressure is generally supplied by a thumb or other manual means. The lesser burst strength of the base 8 causes this to break before the top 10. The flange 44 retains the edge 9 in position. Thus after the base 8 has broken, the tablet 12 is forced or dropped into the container 3, mixing with the liquid therein (Fig. 5).

The container 3 can be shaken or moved to aid in the mixing of the tablet 12 into the liquid. The liquid seal is provided by the edge 9 and the top 10 of the tablet holder 6, which is retained in position by the collar 35. Once the tablet is completely dissolved, the collar 35 and the remains of the holder 6 can be released from the container 3, allowing access to the drink. The collar 35 and the cover 7 may be re-secured to the container 3, providing for a means to reseal the drink, if so desired.

Referring to Figures 6 to 9, a third embodiment of the cap 62 for the container 3 is there shown. Where parts are unchanged from that discussed above with reference to the first embodiment, like numerals are used.

The collar 65 includes a flange 74 and upper side 64 to a flat top 76. A ring of material 75 around the centre of the top 76 is immediately adjacent a breakaway portion 77. The portion 77 is a weakened portion of the top 76. The collar 65 is formed integrally. The flange 74 performs the same function as the flange 14 of the first

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embodiment, as described above.

To mix the two parts of the drink, the cover 7 is removed. The ring of material 75 is lifted up (Fig. 7). Downward pressure is then applied to the top 10, as described above (Fig. 8). The flange 74 retains the edge 9 in position. Thus after the base 8 has broken, the tablet 12 is forced or dropped into the container 3, mixing with the liquid therein (Fig. 9).

In a further preferred embodiment, the ring of material 75 may be pushed downward, acting in the same manner as the button 45 (of the second preferred embodiment) to push the tablet 12 into the container 3.

Referring to Fig. 10, a fourth preferred embodiment of the cap 82 for a container 3 is thereshown. The container 3 includes a top opening with external screw threads on sides 4. A collar 85 is internally screw-threaded to engage with the sides 4 of the container 3. The cap 82 includes a tablet holder 86 and cover 87.

The holder 86 includes a base 88 with a thickened circumferential edge 89, and a top 90. The base 88 and edge 89 are flat, with the top 90 having sides 91. The base 88, top 90, and sides 91 define a space for a tablet 12. The base 88 is of a material that has a considerably smaller burst strength than that of the top 90 or the sides 91. The base 88 is made of a foil material, of known type which is impervious to liquid and gases. If so desired, the foil may included a plastic film of known type.

If so desired, the holder 86 may be arranged with the base 88 and top 90 inverted, so that the top 90 is flat and approximately co-planar with the edge 89. The base 88 and sides 91 would then extend downwardly from the top 90.

The edge 89 and the top 90 are of a material that is generally stiffer than the material of the base 88. However the base 88 is also constructed so that there is a measure of flexibility therein.

Referring to Figs 11 and 16, a fifth preferred embodiment of the cap 112 includes the holder 106 and is thereshown. The holder 106 includes the same parts as the first embodiment or the fourth embodiment of the holder 86 unless varied as here described. The holder 106 includes a circular area of low burst strength, generally indicated by the dotted line B on Fig. 16. This area B, which is essentially a thin annulus, is inward from the flanged edge 109. The burst strength of the area B is less than that of the remainder of the base 108.

Referring to Fig. 10, the collar 85 includes sides 93 and a smaller, annular flange 94. The flange 94 is dimensioned such that when the collar 85 is in position, it extends inwardly of the top of the sides 4 and of the edge 89. However the hole left in the collar 85 is sufficient that the sides 91 and the top 90 of the holder 86 will fit therethrough.

The cover 87 is shaped to fit over the collar 85 and holder 86 and be releasably securable to the collar 85. This securement can be through securing means (not shown) on the collar 85 and the cover 87; or may be in the form of a snap or interference fit between the collar 85 and the cover 87, as is desired. Further, the cover 87 may be hinged to the collar 85, if so desired.

The collar 85 and the cover 87 may include tamper-evident means (not shown) of known type, if so desired. This may be incorporated into the collar 85 and cover 87 at the time of manufacture. Alternatively, the tamper

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evident means may be a plastic film (not shown) which is sealed around the collar 85 and the cover 87, covering the join therebetween. Such film is of the type that can be pulled off the container 3, when opening the container 3.

The collar 85 further includes a top 95 which incorporates a pushing lever generally denoted by the numeral 96. The lever 96 includes a thumb-engaging tab 97 which is connected by a column 98 and base 101 to a flexible section 99 of the top 95. The flexible section 99 is formed integrally with a hinging section, which is generally denoted by the number 100. The flexible section 99 and base 101 of the column 98 are separated from the remainder of the top 90 by cut-out slots and curves section 102. The tab 97 may be larger in surface area than the base 101, if so desired.

The collar 85 further includes an annular seal 103. The seal 103, of a flexible plastics such as EVA, is positioned between the top of the container 3 and the flanged edge 99 of the tablet holder (86, 106). The seal 103 may be permanently affixed to the top of the container 3, if so desired. The seal 103 aids in forming a liquid-tight seal between the container 3 and the collar 85. If so desired, the seal 103 may be an O-ring of known type.

The above described embodiment works as follows: To mix the two parts of the drink, the cover 87 is removed. Downward force (in the direction of Arrow C, Fig. 14) exerted on the tab 97 (Fig. 14). This downward pressure is generally supplied by a thumb or other manual means. As the tab 97 is depressed, the base 101 is depressed below the plane of top 95 to engage with the top 90 of the tablet holder 86. The flexible section 99 deforms (Fig. 14), preferably elastically, to operate as a hinging means or hinge section.

The lesser burst strength of the base 8 of the tablet holder 86 causes the base 88 to break before the top 90. The flange 94 retains the edge 99 in position. Thus after the base 88 has broken, the tablet 12 is forced or dropped into the container 3, mixing with the liquid therein. If the second preferred embodiment of the tablet holder 106 is used, the base 88 bursts almost completely along the area B (Fig. 16), allowing the tablet 12 to fall quickly into the container 3.

If so desired, the holder (86, 106) can be constructed so that the tablet 12 is encased in the foil of the base 88 with a circular overlap (not shown) about the outside of the tablet 12. This overlap is then heat sealed or otherwise laminated to the edge 89 to form the holder (86, 106).

The container 3 can be shaken or moved to aid in the mixing of the tablet 12 into the liquid. Once the tablet 12 is completely dissolved, the collar 85 and the remains of the holder (86, 106) can be released from the container 3, allowing access to the drink. The collar 85 and the cover 87 may be re-secured to the container 3, providing for a means to reseal the container 3, if so desired.

Referring to Fig. 11, a fifth preferred embodiment of the cap 112 of the present invention is thereshown. Where parts are unchanged from that discussed above with reference to the fourth embodiment, like numerals are used.

Referring to Figs. 11 and 21 (a, b), the collar 105 includes a first preferred embodiment of an annular cutting ring 424. The ring 424 includes a plurality of teeth 425 or saw edgings, giving the ring 424 a saw-tooth

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appearance. The tips of the teeth 425 are positioned on a circumference which is substantially the same as the circumference of the weakened area B on the tablet holder 106, if the second preferred embodiment of the holder 106 is used. If so desired, the teeth 425 continue around all the circumference of the ring 424. The collar 105 also includes two seals 103, one above and one below the cutting ring 424.

The operation of the collar 105 has only minor variations on that of the first preferred embodiment of the collar 85, except that as the base 101 bears down on the top 90 of the holder (86, 106), the teeth 125 of the ring 124 aid in bursting the base 88 of the holder (86, 106). The ring 124 can be left in place or removed, as is desired, when the holder (86, 106) and collar 105 are removed from the container 3.

Referring to Figs 18a and b, a second embodiment of the cutting ring 224 is thereshown. The inner tip 225 of the ring 224 is a continuous tapered tip around the circumference of the ring 224.

Figs 19a and b show a third preferred embodiment of a cutting ring 324 of the present invention, in which the inner, upper corner 325 of the ring 324 acts as the cutting edge. In like manner, Figs 21a and b show a fourth preferred embodiment of the cutting ring 424 with teeth 425. The major difference between this embodiment and the fourth preferred embodiment of the ring 124 is that the teeth 425 do not taper to a point at the tip as do the teeth 125 (Fig. 17a and b).

Referring to Fig. 12, a third preferred embodiment of the collar 205 is thereshown in a sixth preferred embodiment of the cap 132 of the present invention. Where parts are unchanged from that discussed above with reference to the fourth embodiment, like numerals are used.

The collar 205 includes a cutting ring 124 and one seal 103. Whilst the ring 124 is shown as the first preferred embodiment of the ring 124, it will be appreciated by one skilled in the field that any of the embodiments of the ring (124, 224, 324, 424) may be used, without departing from the scope of the invention.

Between the ring 124 and the seal 103 is a further, splash guard 25 which is circular in cross-section. If so desired, the guard 25 may be glued or otherwise permanently affixed to either the underside of the ring 124 or the top side of the seal 103, as is desired. The guard 25 is broken by the tablet 12 as it is pushed through into the container 3 by the downward action of the tab 97.

Referring to Fig. 13, a seventh preferred embodiment of the cap 152 of the present invention is thereshown. Where parts are unchanged from that discussed above with reference to the fourth embodiment, like numerals are used.

In this embodiment of the cap 152 the seal and cutting ring are combined into one part, generally denoted by numeral 123. This includes a shoulder of soft flexible material and an inner serrated edge, with teeth 225, of a harder material. If so desired, a splash guard-25 may be incorporated into the embodiment, as described above. The liquid seal is broken in the same manner as described above.

The pushing lever 96 has been described with a circular cross-section. However, it will be appreciated by those skilled in the art that the cross-sectional shape may be other than circular, for example, oval.

A second preferred embodiment of the pushing lever 216 is shown in Fig. 15. The tab 117, column 118 and

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base 121 are of oval cross-section. The cut-out section 222 is arcuate and the two sides of the section 222 are not parallel.

A third preferred embodiment of the pushing lever 316 is shown in Fig. 20. The tab 117 is secured to a curved flexible section 319, with curved cut-outs 322.

It will be appreciated by one skilled in the art that the elements of the various embodiments of the pushing lever (96, 116, 216, 316) may be combined in different ways, without departing from the scope of the invention.

All parts of the cap (2, 32, 62, 82, 112, 132) are of plastics material. The collar (5, 35, 65, 85, 105, 205, 305) is formed in one piece, as is the cover (7, 87) and the holder (6, 86, 106). However, if so desired, the components may be formed in more than one piece and later assembled. The seal 103 is preferably of a very flexible plastics or a foam plastics such as EVA, or the like. The ring (124, 224, 324) is preferably of a rigid plastics material.

If so desired, the drink (consisting of the container 3, cap (2, 32, 62, 82, 112, 132), the tablet 12, and water or fluid) can be sold with an additional sipper top (not shown) so that the drink can easily be resealed once ready for drinking. Preferably the tablet 12 is of known type that is effervescent and/or easily dissolvable in water or a liquid.

Also, it will be appreciated that the above described holder (6, 86, 106) is a 'use once' variety. However, the remaining elements of the cap (2, 32, 62, 82, 112, 132) and container 3 may be re-used, if so desired. However, the materials and construction of these components are of such a nature that the cap (2, 32, 62, 82, 112, 132) and container 3 may be for a use once drink, at a reasonable price for the overhead of the cost of the container 3 in the cost of the drink.

The invention has been discussed above with a number of embodiments for the collar (5, 85, 105, 205, 305) and the pushing lever (96, 216, 316), it will be appreciated that these may be used in various combinations from the range of embodiments, without departing from the scope of the invention.

Aspects of the present invention have been described by way of example only and it should be appreciated that modifications and additions may be made thereto without departing from the scope thereof.

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CLAIMS:

1. A cap for a liquid container with a top opening, said cap including:

a tablet holder which includes a flanged flat edge which is capable of being heat sealed or glued to other materials; a flexible top; a base of flexible material, said base having a burst strength which is less than that of said top; wherein the flanged edge, the top and the base are capable of lamination; and wherein the top and the base are spaced apart, forming a space for the placement therebetween of a tablet;

a collar with means to releasably engage with the top of the container, said collar including a flange for releasably retaining said flanged edge of the tablet holder between the collar and the top of the container, forming a fluid seal therebetween;

a cover which is releasably securable to the collar; and

pushing means capable of manual operation to push the top of the tablet holder inwards into the container, when the tablet holder is in position; wherein

the top of the tablet holder provides part of the fluid seal once the burst strength of the base is exceeded on application of force to the pushing means; and wherein

said tablet holder and collar are releasably removable from the container.

2. A cap for a liquid container as claimed in claim 1 wherein said pushing means is formed integrally with the cover.

3. A cap for a container as claimed in claim 2 wherein said pushing means includes a centrally located area of reinforcement of a strength greater than that of the remainder of the cover.

4. A cap for a container as claimed in claim 3 wherein said area of reinforcement comprises a raised dome.

5. A cap for a container as claimed in any one of claims 2 to 4 wherein said pushing means includes a tear away portion on the top of the cover, which portion can be partially released from the cover and pushed down onto the top of the tablet holder in one action.

6. A cap for a container as claimed in either claim 1 or claim 2 wherein said pushing means includes:
a hinged portion of the top of the cover, said hinged portion comprising: a partially cut away

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section, being from the top of the cover; and two sections, one of which is a straight section of the top of the cover, which straight section is flexible and acts as a hinge means for the hinged portion, and a cut-away section which section is resiliently moveable; and

an operative portion, which includes digit-engaging means, and which portion is positioned over the cut-away section of the hinged portion, said operative section being moveable between a first and a second position, the second position being one in which pressure is applied through the cut-away portion, to the top of the tablet holder.

7. A cap for a container as claimed in claim 6 wherein said digit-engaging means is a circular tab which is elevated above the top of the cover by a columnar support.

8. A cap for a container as claimed in either claim 6 or claim 7 wherein said cut away portion includes a balloon-style end portion which is immediately underneath from the digit-engaging means.

9. A cap for a container as claimed in any one of claims 6 to 8 wherein the shape of the cut-away is selected from: straight sided with a balloon-style end portion; parallel arcuate sides; non-parallel straight sides; non-parallel arcuate sides; and a combination thereof.

10. A cap for a container as claimed in any one of the preceding claims wherein said tablet holder is formed a planar base and flanged edge, the top being above and spaced apart from the base.

11. A cap for a container as claimed in any one of claims 1 to 9 wherein said base and top are of a highly flexible material, the edges of the top and base being heat sealed, about the tablet, to form the flanged edge.

12. A cap for a container as claimed in any one of the preceding claims wherein said base of the tablet holder includes a circular annulus positioned adjacent to and inward of the flanged edge, the burst strength of the circular annulus having a burst strength which is less than that of the remainder of the base.

13. A cap for a container as claimed in any one of the preceding claims wherein the cap further includes an annular cutting ring which is positioned between the top of the container and the underside of the

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flanged edge of the table holder, immediately on the top of the container.

14. A cap for a container as claimed in claim 13 wherein said ring further includes an inner edge adapted for cutting or tearing the base of the tablet holder.

15. A cap for a container as claimed in claim 14 wherein said inner edge is formed in a saw tooth pattern, with the apices of the teeth facing inwards.

16. A cap for a container as claimed in any one of claims 13 to 15 wherein the inner edge is continuous around the circumference of the annulus.

17. A cap for a container as claimed in any one of the preceding claims wherein said cap further includes a flexible seal positioned below the table holder and between the tablet holder and the container, said flexible seal have a burst strength equal to or less than that of any or all parts of the base.

18. A cap for a container as claimed in any one of claims 13 to 17 wherein said cap further includes a secondary annular seal positioned between the cutting edge and the top of the container.

19. A cap for a container as claimed in claim 18 wherein the flexible seal, secondary seal and cutting ring are formed integrally.

20. A cap for a container as claimed in any one of the preceding claims wherein said cap further includes tamper evidence means.

21. A cap for a container as claimed in claim 20 wherein said tamper evident means is a ring of material formed integrally with said cover.

22. A cap for a container as claimed in any one of the preceding claims wherein said cap further includes a sipper top securable to the top of the container after the tablet is released and the cover and cap are removed from the container.

23. A cap for a container substantially as hereinbefore described and with reference to any one of Figures 1-3, or 4 and 5, or 6-9 or 10, or 11 and 14, or 12 or 13, in combination with Figs 15-21 of the accompanying drawings.

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24. A drink comprising two components, said components being stored separately and mixed prior to consumption, said drink comprising a container, a cap as claimed in any one of the preceding claims, a liquid and a solid in tablet form.

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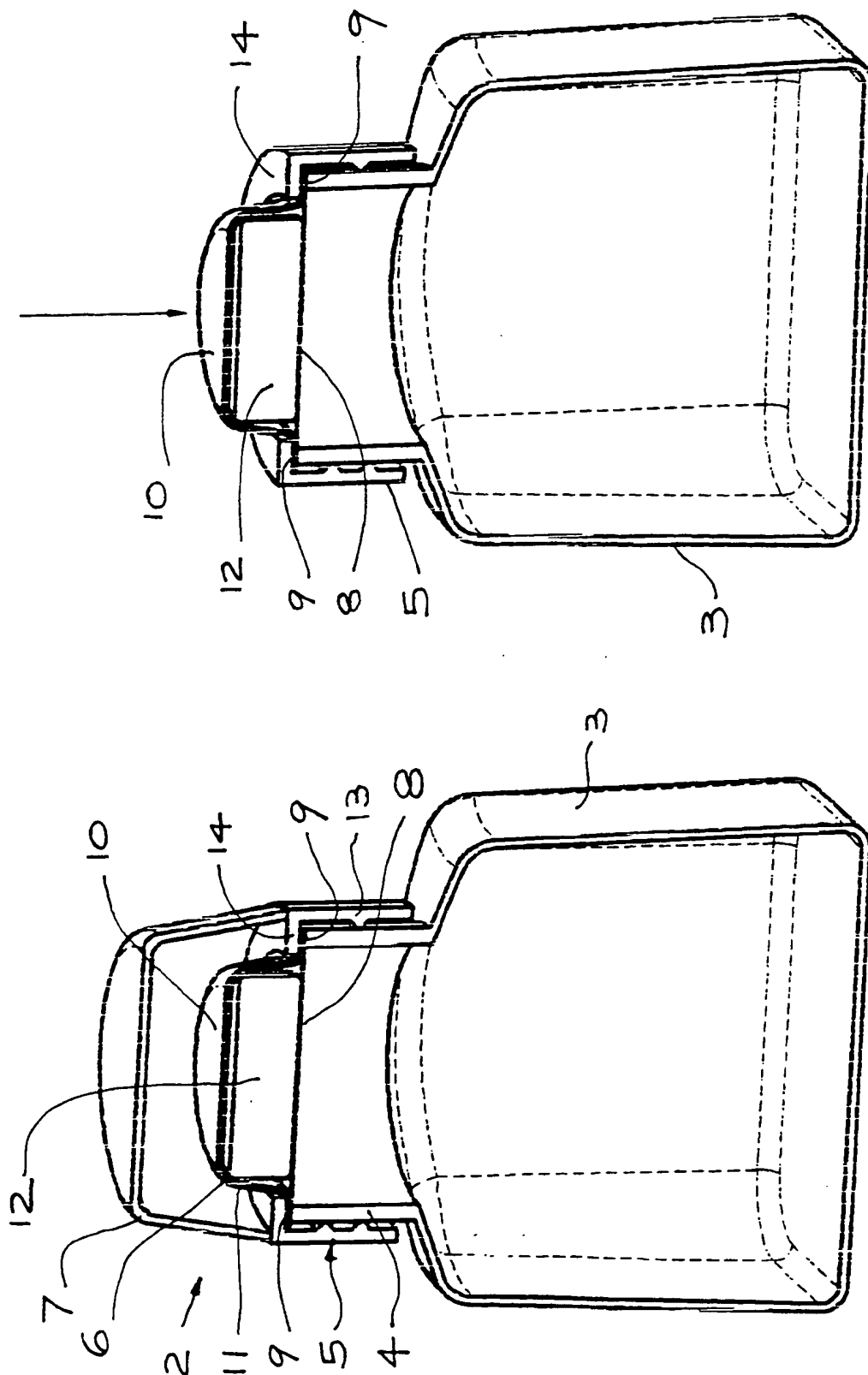


FIG. 1

FIG. 2

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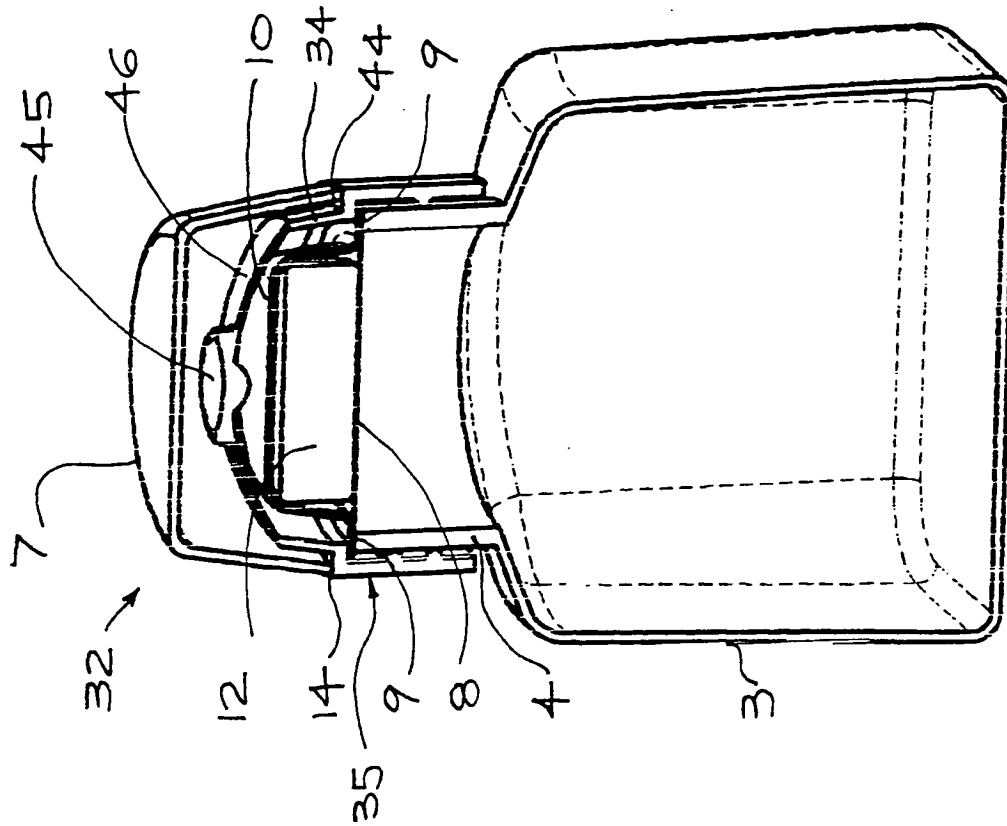


FIG. 4

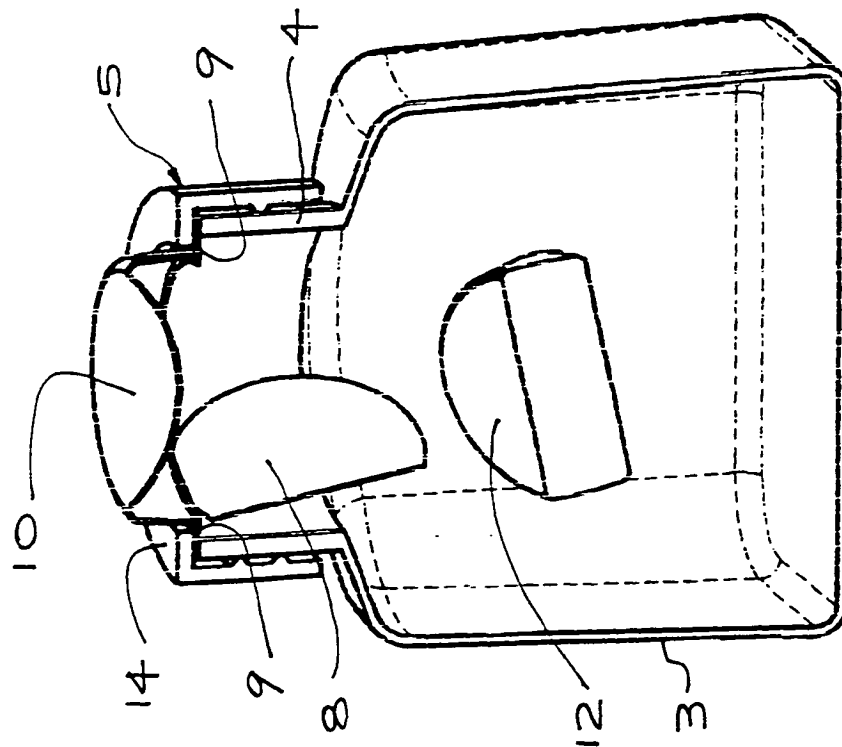


FIG. 3

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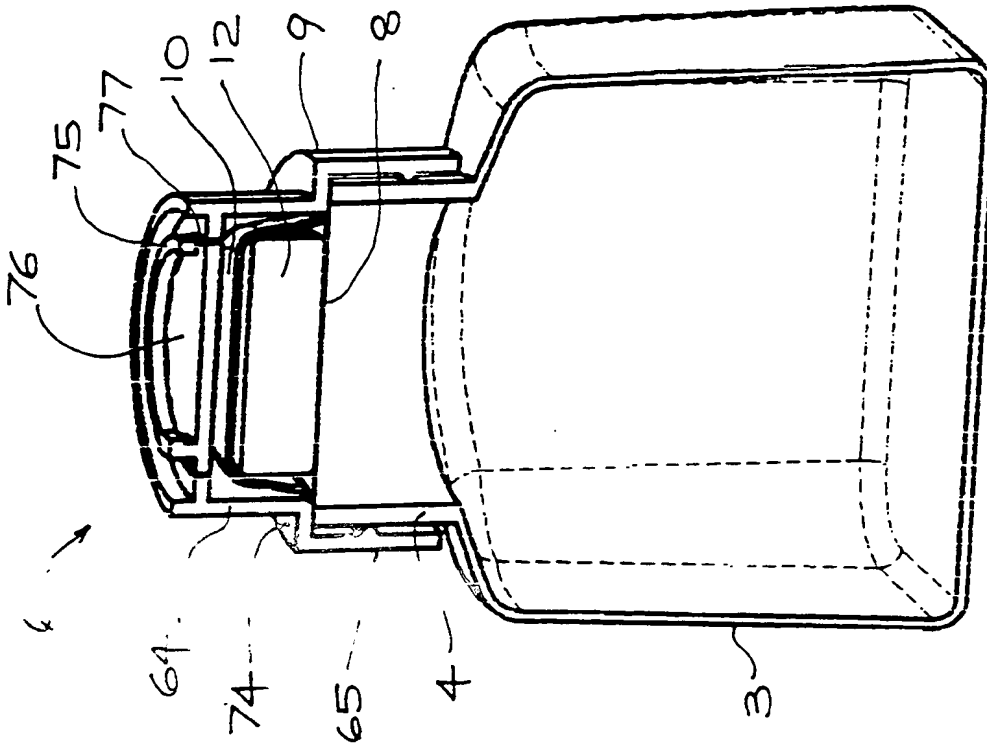


FIG. 6

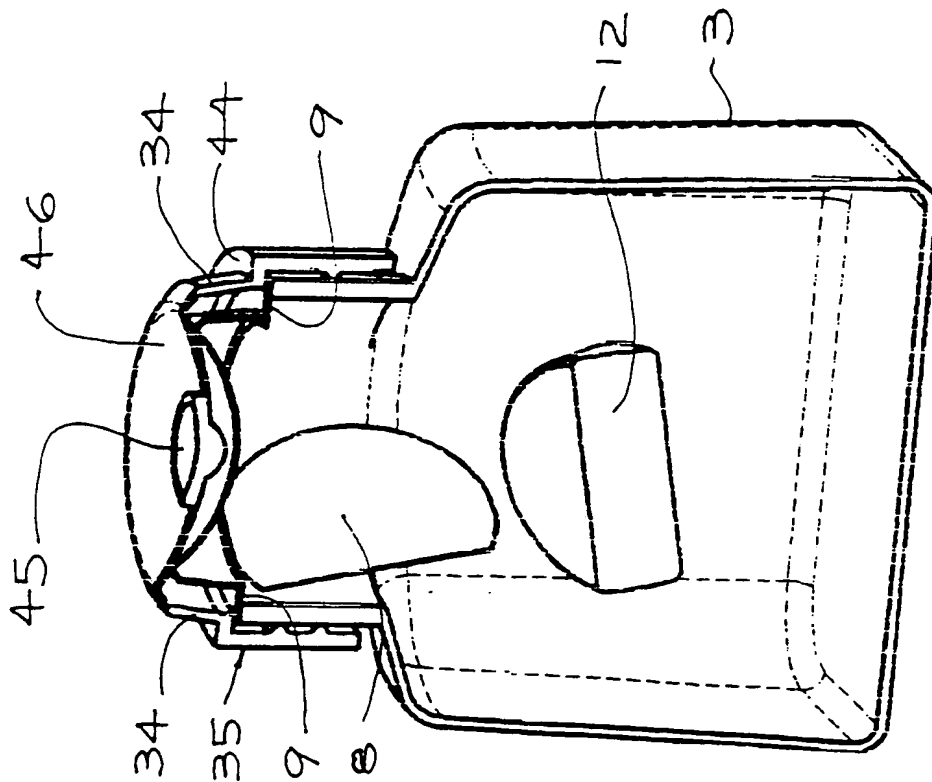
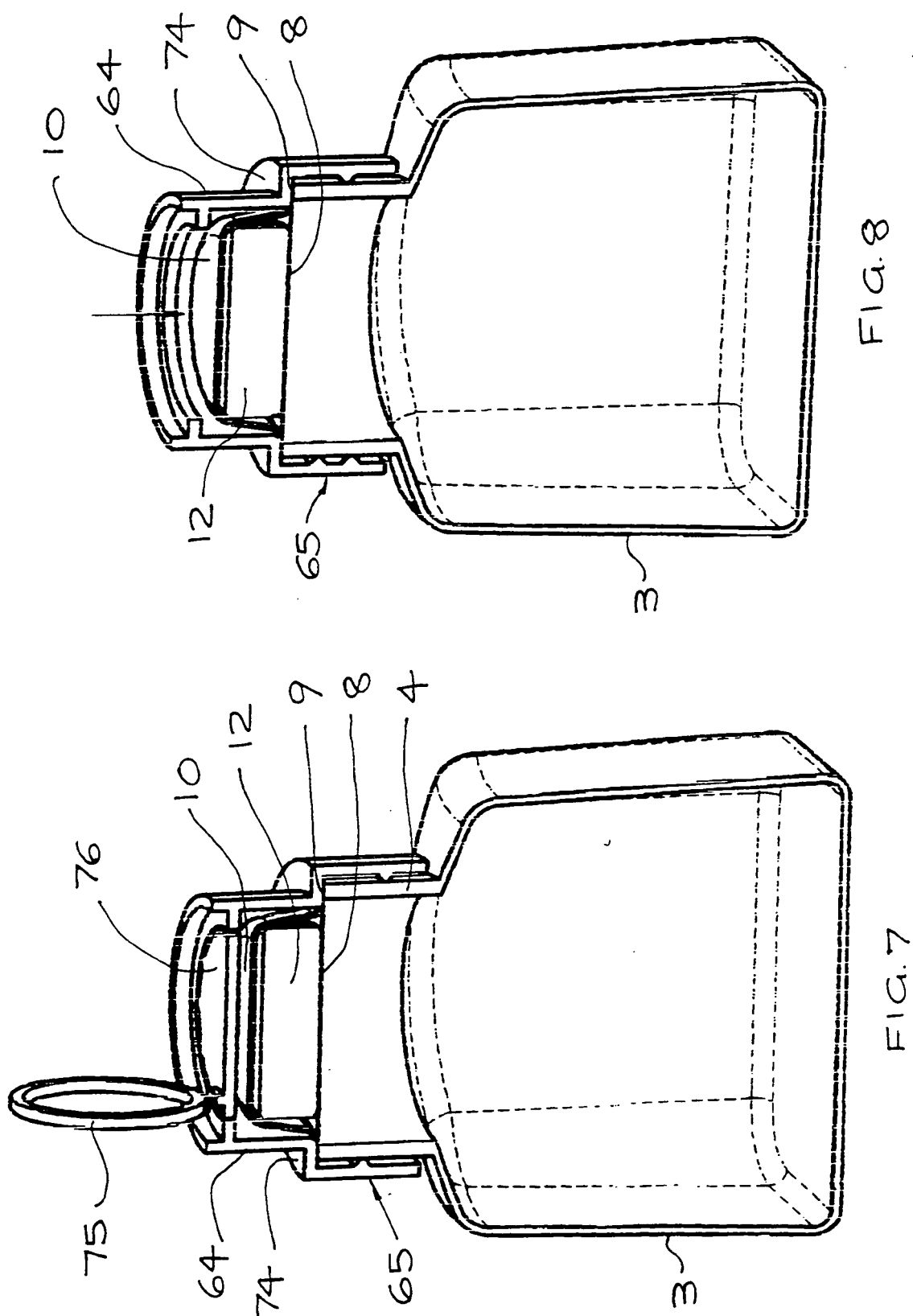


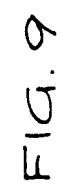
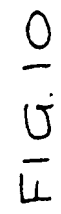
FIG. 5

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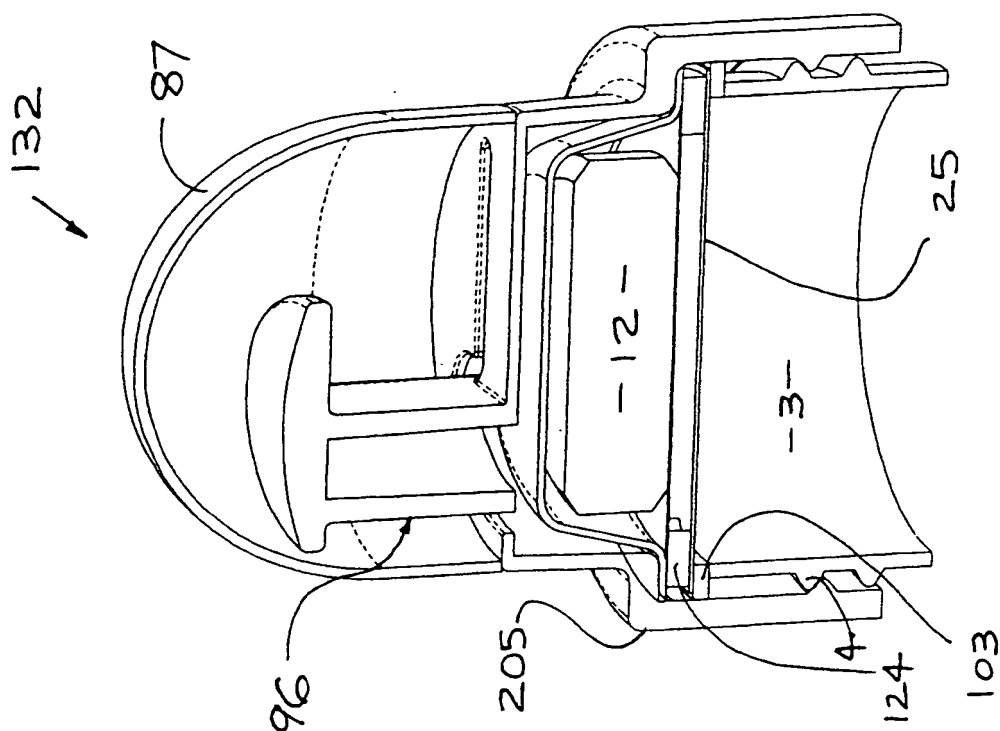


FIG. 12

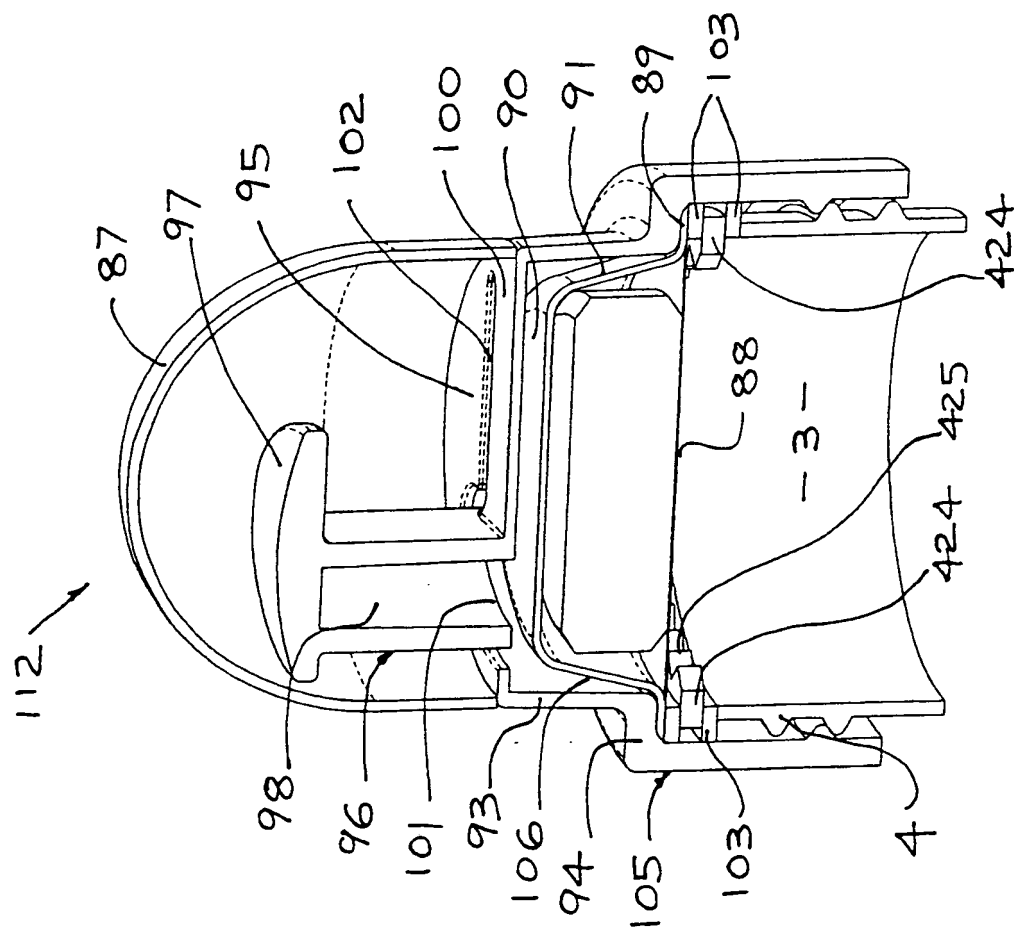
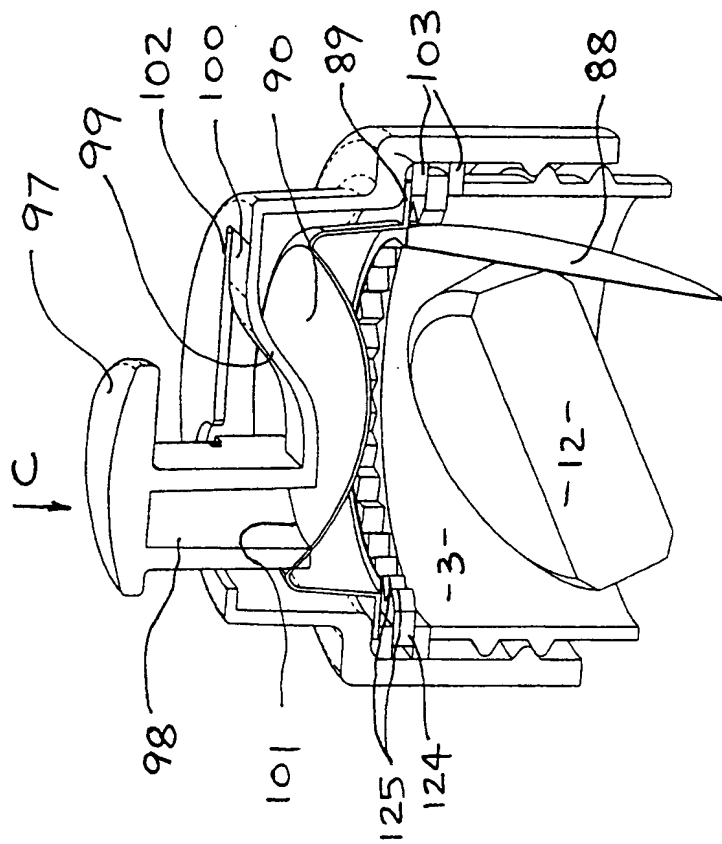
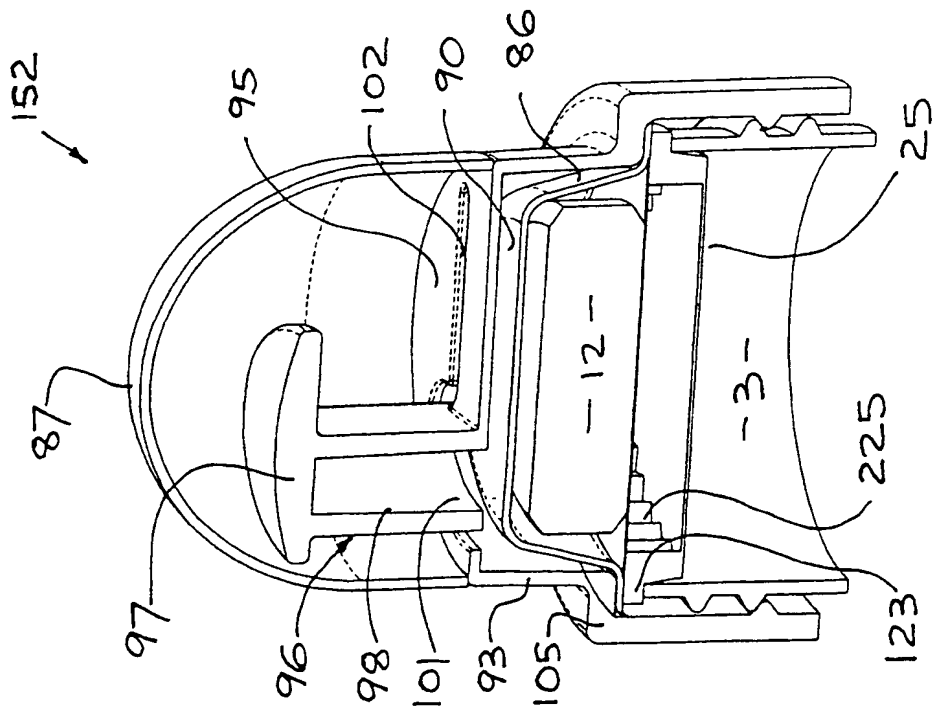


FIG. 11

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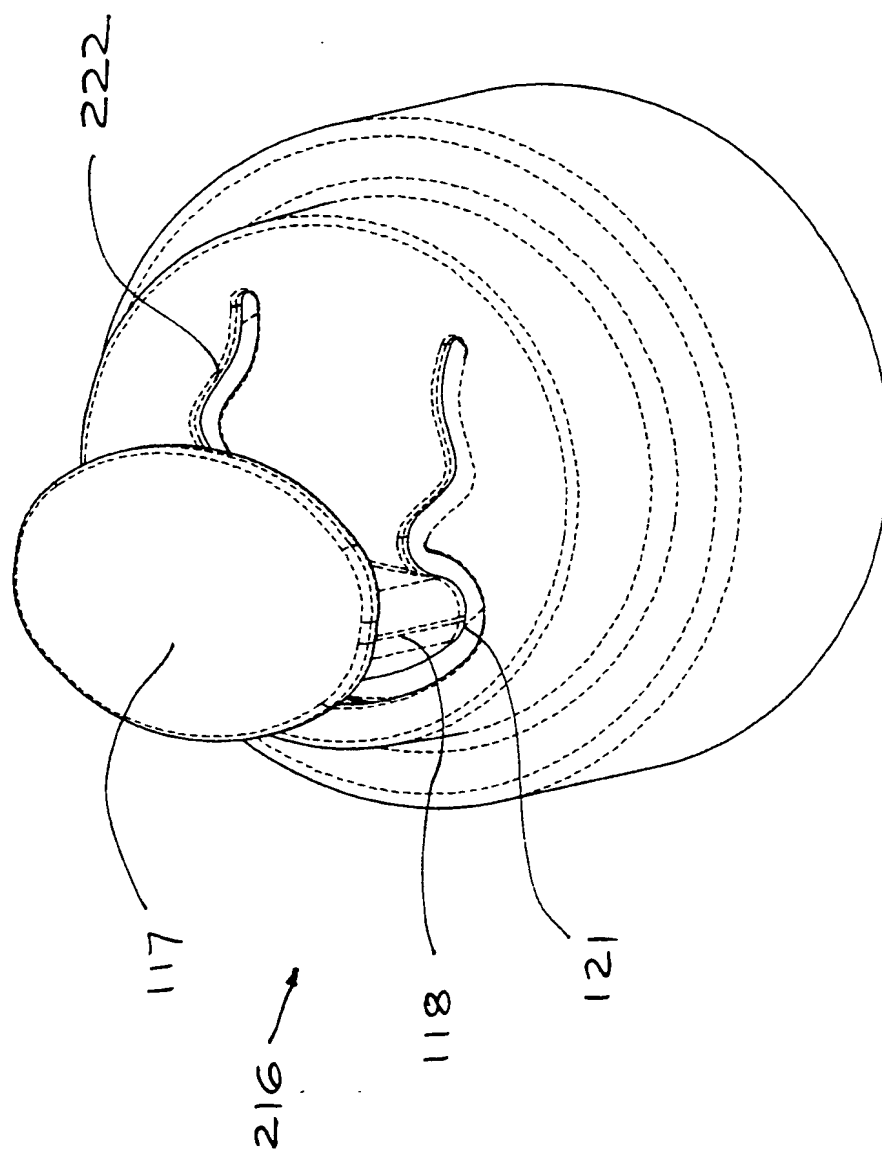


FIG. 15

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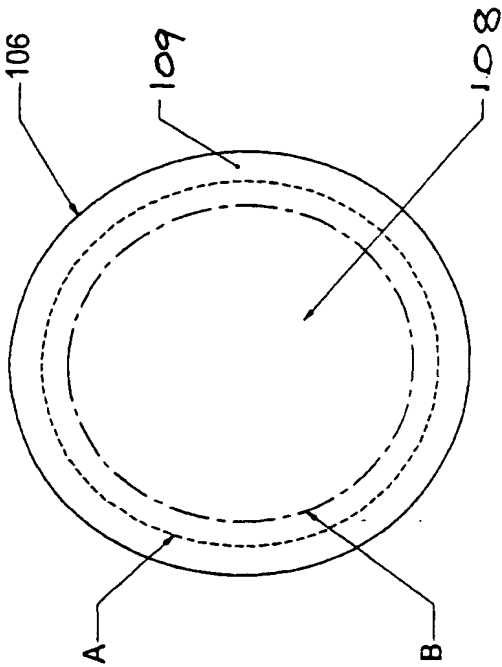


FIG. 16

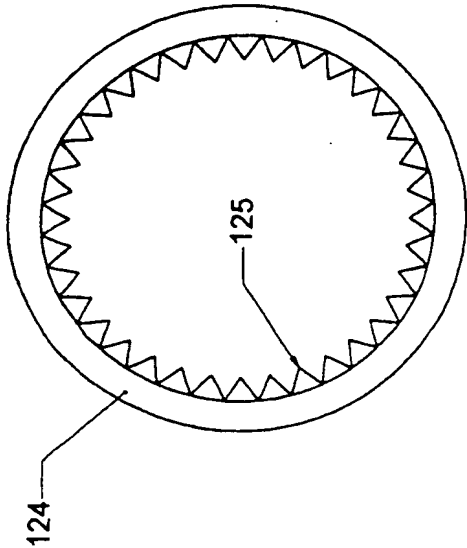


FIG. 17a

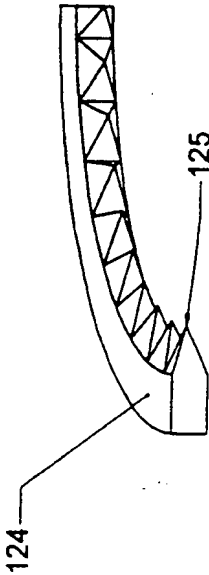


FIG. 17b

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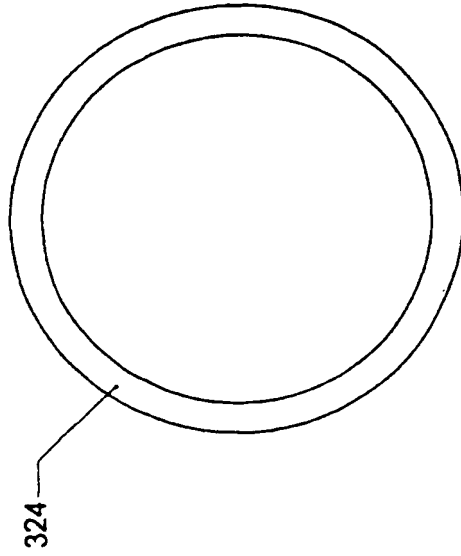


FIG. 19a

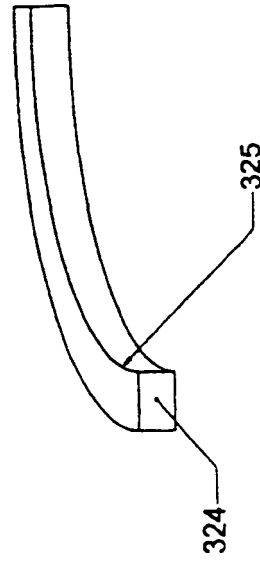


FIG. 19b

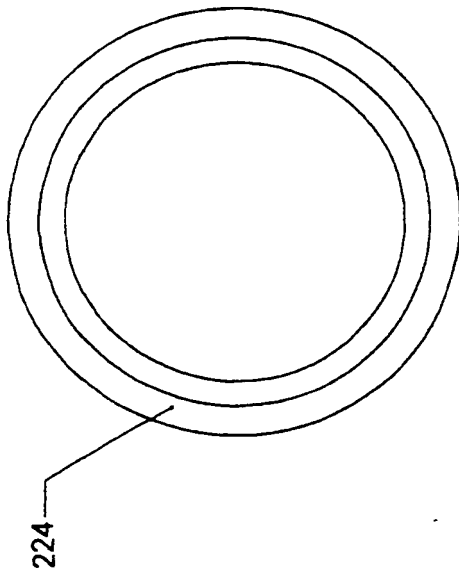


FIG. 18a



FIG. 18b

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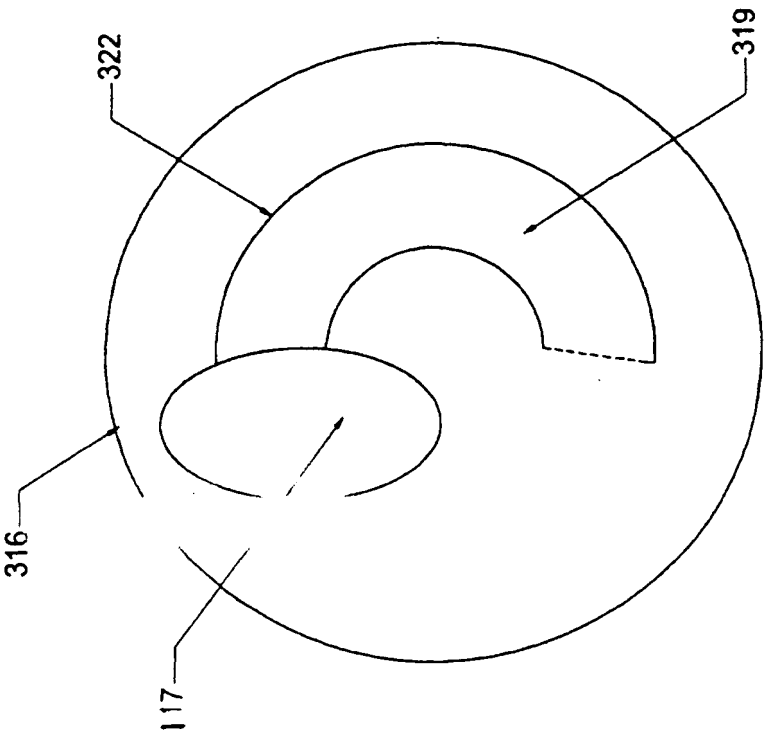


FIG. 20

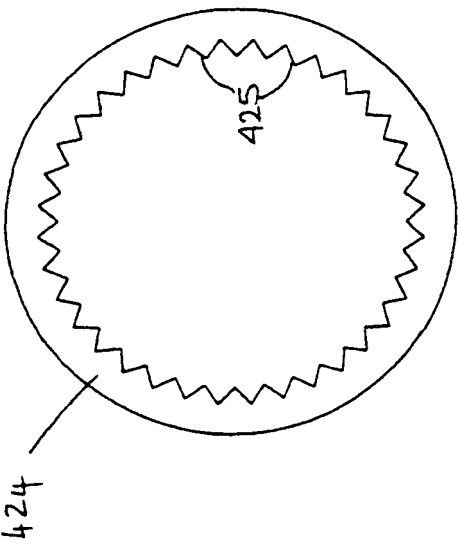


FIG. 21a

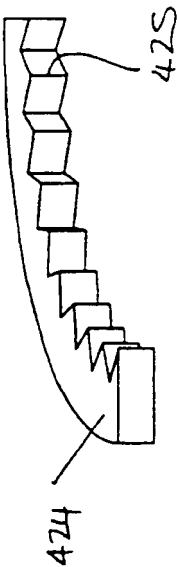


FIG. 21b

INTERNATIONAL SEARCH REPORT

International application No.
PCT/NZ99/00185

A. CLASSIFICATION OF SUBJECT MATTER																						
Int. Cl. ⁷ : B65D 25/08, 51/28, 81/32																						
According to International Patent Classification (IPC) or to both national classification and IPC																						
B. FIELDS SEARCHED																						
Minimum documentation searched (classification system followed by classification symbols) B65D 81/32, 23/04, 25/08, 51/22, 51/20, 51/28																						
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched																						
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) WPAT: (tablet or pill or powder or additive)																						
C. DOCUMENTS CONSIDERED TO BE RELEVANT																						
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.																				
A	WO 98/00348 A (GARTNER et al.) 8 January 1998 See entire document	1-24																				
A	US 3347410 A (SCHWARTZMAN) 17 October 1967 See entire document	1-24																				
A	DE 29800794 U1 (MULLER) 23 April 1998 See entire document	1-24																				
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex																						
<p>* Special categories of cited documents:</p> <table border="0"> <tr> <td>"A"</td> <td>document defining the general state of the art which is not considered to be of particular relevance</td> <td>"T"</td> <td>later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</td> </tr> <tr> <td>"E"</td> <td>earlier application or patent but published on or after the international filing date</td> <td>"X"</td> <td>document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</td> </tr> <tr> <td>"L"</td> <td>document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</td> <td>"Y"</td> <td>document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</td> </tr> <tr> <td>"O"</td> <td>document referring to an oral disclosure, use, exhibition or other means</td> <td>"&"</td> <td>document member of the same patent family</td> </tr> <tr> <td>"P"</td> <td>document published prior to the international filing date but later than the priority date claimed</td> <td></td> <td></td> </tr> </table>			"A"	document defining the general state of the art which is not considered to be of particular relevance	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	"E"	earlier application or patent but published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art	"O"	document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family	"P"	document published prior to the international filing date but later than the priority date claimed		
"A"	document defining the general state of the art which is not considered to be of particular relevance	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention																			
"E"	earlier application or patent but published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone																			
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art																			
"O"	document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family																			
"P"	document published prior to the international filing date but later than the priority date claimed																					
Date of the actual completion of the international search 15 March 2000		Date of mailing of the international search report 28 MAR 2000																				
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929		Authorized officer KARYN MURRAY Telephone No : (02) 6283 2510																				

INTERNATIONAL SEARCH REPORT

International application No.

PCT/NZ99/00185

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 93/14990 A (ALLERGAN, INC) 5 August 1993 See entire document	1-24
A	US 4638927 A (MORANE) 27 January 1987 See entire document	1-24
A	Patent Abstracts of Japan, JP, 10-042944 A (KANEBO LTD KEY TRANDING CO LTD) 17 February 1998 See abstract	1-24

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/NZ99/00185

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report				Patent Family Member			
WO	98/00348	AU	30847/97	CA	2258997	CN	1230934
		EP	929466				
US	3347410	NONE					
DE	29800794	AU	27035/99	WO	99/37553		
WO	93/14990	AU	36007/93	IL	104463	MX	9300480
US	4638927	BE	902411	CA	1275077	CH	662327
		DE	3516959	FR	2564433	GB	2158801
		IT	1208806	JP	61000162		
JP	10042944	NONE					
							END OF ANNEX